CDM Smith

Memorandum

To: *Claire Maulhardt*

From: *Terry Meeneghan*

Date: *September 22, 2021*

Subject: *Summary of Spring Creek Pump Station and Interceptor Tasks*

CRW asked for a summary of the technical analyses and decisions that will need to be made for the planned rehabilitation/enhancement of the Spring Creek Interceptor and Pump Station and how the complexity of the work and the required coordination with the tributary satellite communities could impact PCD schedules. Flow monitoring and H/H model analyses indicate that over 90 percent of the flow in the Spring Creek interceptor is generated by the satellite communities discharging into CRW's system: Swatara, Susquehanna, and Lower Paxton Townships, and Penbrook and Paxtang Boroughs. All of the satellite communities are served by separate sewer collection systems and the CRW sewershed areas are served by both combined and separate sewer systems.

Pump Station: The Spring Creek Pump Station is beyond its useful design life and is scheduled to be rehabilitated and enhanced.

Prior technical analyses yielded the following conclusions:

- The H/H model indicates that peak flows during the 2-year design storm exceed the existing hydraulic capacity of the Spring Creek Pump Station.
- Preliminary investigations indicate that a hydraulic capacity of 20 MGD can be achieved within the existing footprint of the pump station.

Interceptor: The Spring Creek Interceptor is scheduled to be rehabilitated to address structural deficiencies. Hydraulic improvements to the interceptor to address hydraulic capacity limitations will also be evaluated, and the cost-effectiveness of replacement and repair alternatives versus flow reduction/equalization will be evaluated.

Prior technical analyses yielded the following conclusions:

- Peak flows during the 2-year design storm surcharge the entire length of the Spring Creek interceptor that is owned and operated by CRW.
- Five interceptor manholes exhibit hydraulic grade line profiles above the manhole rims during the 2-year and 5-year design storms, increasing to 6 manholes during the 10-year design storm.

- CRW has sealed many of the manholes along its section of the Spring Creek interceptor to withstand pressure flow conditions and reduce the risk of SSOs. However, H/H model results indicate that surcharge levels become prohibitively excessive as flows increase.

- While evidence of the possibility for SSOs exists along Spring Creek manholes, there are no adjacent buildings near these manholes, located along a deep valley, so no basement backup would occur.

- CRW will use the H/H model to evaluate alternative pipe sizes and coordinate with the satellite communities to determine if a new and larger interceptor is required or if the existing interceptor can be lined.

Alternatives: Several alternatives for addressing capacity constraints along the Spring Creek Interceptor and within the pump station will need to be developed and assessed. A final remedial measure recommendation must be developed which incorporates the multi-jurisdictional use of the interceptor and pump station that is outside of CRW's direct control.

- Wet weather flow conditions are being evaluated in the tributary systems operated by the satellite communities; however, a question for further study is whether it is cost-effective to reduce existing wet weather peak flows generated within the contributing jurisdictions, or if they may need additional conveyance and treatment capacity from CRW.

- The Spring Creek Pump Station is scheduled for a major rehabilitation, and hydraulic modeling indicates that increased pumping capacity at the pump station can lower the hydraulic grade line within CRW's portion of the Spring Creek interceptor.

- A multi-jurisdictional storage and flow equalization facility constructed above CRW's portion of the Spring Creek interceptor may be a cost-effective alternative if the satellite communities would require additional conveyance to eliminate their SSOs. The facility could also reduce the required size for the Spring Creek Interceptor and facilitate rehabilitation rather than replacement with a larger pipe.

Further ongoing evaluation of Spring Creek Interceptor and Pump Station remediation options must be performed in conjunction with all the municipalities using them in order to develop a cost-effective plan for moving forward. This plan must be included in the implementation of CRW's integrated wastewater/ stormwater City Beautiful H_2O Program Plan through the adaptive management process. The CBH_2OPP will address both rehabilitation needs and hydraulic improvements necessary to meet CSO and SSO control objectives.